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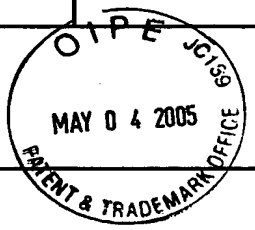
AMENDMENT TRANSMITTAL LETTER (Large Entity) Applicant(s): Young-Hwan YUN et al.					Docket No. SEC.1061
Application No. 10/644,893	Filing Date August 21, 2003	Examiner Brian K. Young	Customer No. 20987	Group Art Unit 2819	Confirmation No. 6402

Invention: ANALOG-TO-DIGITAL CONVERTER FOR IMAGE SENSOR



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CLAIMS AS AMENDED

	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST # PREV. PAID FOR		NUMBER EXTRA CLAIMS PRESENT	RATE	ADDITIONAL FEE
TOTAL CLAIMS	20	-	20	=	0	x $50.00	$0.00
INDEP. CLAIMS	2	-	3	=	0	x $200.00	$0.00
Multiple Dependent Claims (check if applicable) ☐							$0.00
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of	:	
Young-Hwan YUN et al.	:	Group Art Unit 2819
Application No. 10/644,893	:	Examiner: YOUNG, Brian K
Filing Date: August 21, 2003	:	
Title: Analog-to-Digital Converter for Image Sensor	:	

REQUEST FOR RECONSIDERATION

U.S. Patent and Trademark Office
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Sir:

In the Office Action dated February 8, 2005, independent Claim 1 was rejected as being anticipated by Yang et al. (U.S. Patent No. 6,552,746) under 35 U.S.C. § 102(e). Dependent Claims 2-9 were objected to as depending from the rejected claim. The rejection of Claim 1 and the related objection are respectfully traversed for at least the following reasons.

The Office Action states that Yang et al. (hereafter, Yang) discloses "a first input terminal that receives a first-level analog signal (the image sensor diode connected to node N1) during a first active period (before RESET input) of a first switching signal" (See, Office Action at page 2, paragraph 2, lines 3-5). The meaning of this statement is largely unascertainable, but where understood is clearly erroneous.

First, the Office Action makes ambiguous and misleading use of the terms "input terminal", "active period", and "switching signal" in describing the teachings of Yang. For example, according to the Office Action, Yang

teaches a "first input terminal" in the form of "the image sensor diode connected to node N1" (photodetector PD). Since a photodetector and an input terminal are two completely different things, the Office Action's use of the term "terminal" is misplaced. In addition, since photodetector PD does not receive an analog signal, it can not reasonably be construed as the "first input terminal" recited in Claim 1. So, in an attempt to make some sense out of the foregoing statement, applicants assume that the "first input terminal" identified in the Office Action actually refers to node N1 rather than photodetector PD.

The Office Action next describes Yang as teaching a "first active period" defined as "before RESET input" (See, Office action at page 2, paragraph 2, line 5). However, Yang does not disclose receiving an analog signal during any such "period". Instead, as illustrated in Figure 3 of Yang, the reset signal is asserted before any signaling operations take place (See, for example, Yang at col. 5, lines 13-17).

The term "first switching signal" is not identified within the prior art by the Office Action at all. After lengthy consideration, applicants are unable to identify which, if any, of the signals in Yang could reasonably be considered a first switching signal. If the Office truly believes that Yang suggests or discloses this feature of the claimed invention, applicants respectfully request a more particular explanation.

For at least the foregoing failures to properly identify the above recited features, the rejection of claim 1 over Yang should be withdrawn, and if reinstated should contain a more particular explanation of the Office's reasoning.

In addition to the foregoing, the Office Action also fails to point out any part of Yang's disclosure describing or suggesting a "first input terminal being coupled to a data line to receive a second-level analog signal corresponding to image charges" (See, claim 1, lines 5-6). Perhaps as a surrogate for such a disclosure, the Office Action mentions "an input circuit being coupled to data

(Vinv) to receive an analog signal corresponding to image charges" (See, Office Action at page 2, paragraph 2, lines 6-8). However, since the referenced "input circuit" is completely separate from Yang's first input terminal, and since "Vinv" is neither a data line nor an analog signal, but rather an independently asserted control signal apparent only at the gate of transistor M4 (See, Yang at Col. 6, lines 52-53), the Office Action's oblige reference to an "input circuit" can not be taken seriously as a basis for rejecting claim 1 over Yang. Since Yang fails to disclose a first input terminal coupled to a data line as recited in claim 1, the rejection of claim 1 is unwarranted and should be withdrawn.

The Office Action further states that Yang discloses "a second input terminal that receives a time varying reference (signal capacitor CD)" (See, page 2, paragraph 2, lines 5-6). In contrast to the Office Action's statement, however, Yang describes element CD as "the parasitic capacitance on node N1" (See, Yang at Col. 5, line 25). Since parasitic capacitance CD is a function of charge apparent at node N1, the Office Action's assertion that it constitutes a "reference" is unjustified. If element CD is a reference, then with respect to what is it a reference? In addition, the Office Action has failed to particularly point out which portion of Yang it considers to be the "second input terminal". Although one could assume that the Office Action considers node N1 to be the second input terminal, this assumption would be at odds with the earlier assumption that node N1 is the *first* input terminal. Whatever its intended meaning may be, the Office Action has failed to make its case. Since the Office Action utterly fails to show where Yang discloses a second input terminal or an associated time varying reference signal, the rejection of claim 1 is unwarranted and should be withdrawn.

The Office Action further states that Yang discloses "an inverter (see Vinv) that inverts and amplifies (Vamp) an output of said analog integrated circuit in response to an activated enable signal" (See, Office Action at page 2,

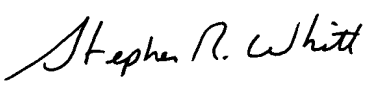
paragraph 2, lines 9-10). Regarding this statement, Vinv and Vamp are simply control signals applied to the gates of respective p-channel and n-channel transistors and do not constitute an inverter or an amplifier. Furthermore, the Office Action fails to point out where (if at all) Yang discloses the activated enable signal. Since the Office Action fails to point out where Yang discloses an inverter or an activated enable signal, the rejection of claim 1 is unwarranted and should be withdrawn.

The Office Action further states that Yang discloses "an output circuit that generates a digital word (Bit ADC to Signal Processor) indicative of a time period defined by a start signal and an end signal corresponding to a transition of an output of said inverter circuit" (See, Office Action at page 2, paragraph 2, lines 10-13). The Office Action offers no justification for this statement aside from an indication that the low-bit ADC generates a digital word. Yang fails to disclose that the digital word generated by the low-bit ADC indicates a particular period of time. Yang only mentions that the low-bit ADC can be biased to induce dithering by using a RAMP voltage or a counter. It should be noted, however, that Yang fails to provide antecedent basis or further description for either the counter or the RAMP voltage. Since Yang fails to disclose the output circuit of claim 1, the rejection of claim 1 is unwarranted and should be withdrawn.

Finally, the Office Action states that "the enable signal is deactivated between an end point of the first active period and an end point of the second active period of the first switching signal" (See, Office Action at page 2, paragraph 2, lines 13-15). Again, no justification for this statement is offered by the Office Action. However, since Yang doesn't disclose an enable signal, a first active period, a second active period, or a first switching signal, it is difficult to comprehend what the Office Action might even be referring to in saying that the enable signal is deactivated.

In conclusion, the Office Action's rejection of claim 1 under 35 U.S.C. § 102 is unwarranted because Yang fails to teach every (any?) element of claim 1. The Office Action fails to provide adequate support for its rejection of claim 1 and in many cases completely avoids pointing out features in Yang that it believes coincides with features in claim 1. Unless the examiner is able to clearly describe where Yang teaches *every element* of claim 1, the rejection of claim 1 should be withdrawn.

Respectfully submitted,



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